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"Things are different now": Farmer perceptions of cultural ecosystem services of traditional rice landscapes in Vietnam and the Philippines

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ABSTRACT

Traditional rice production has shaped distinctive cultural landscapes in SE Asia. Rice cultivation is closely linked to socio-cultural values and has created specific agrobiodiversity. Increasing development pressures lead to an intensification of small-scale production systems and with this to changes of landscapes and associated ecosystems services. With a focus on cultural ecosystem services and along different land use gradients a qualitative assessment of farmer's perceptions regarding cultural values of their landscapes was conducted. Interviews focused on traditional farming methods and the abundance of cultural values and perceptions that support the preservation of low-input, sustainable land management strategies. 73 indicators for Cultural Identity, Landscape Aesthetics, and Knowledge Systems were derived, revealing that socio-cultural structures and the socioeconomic situation of farmers influence their view on landscape-related cultural services. The qualitative approach of this research provides an important contribution to the field of ecosystem service assessments because these are the values people perceive based on culturally embedded and socially shaped preferences. For the implementation of ecological engineering, which is based on participation and on the belief into the natural resilience of ecosystems, the assessment of cultural ecosystem services provides important evidence in which areas this theoretical concept could find higher acceptance.

1. Introduction

In Southeast-Asia, the agricultural intensification as part of substantial socio-economic transformation processes has induced the severe degradation or even disappearance of traditional cultural landscapes (Shrestha, 2011; Miettinen et al., 2014; Gibbs and Salmon, 2015). These landscapes are not only unique results of the complex interplay between humans and nature, but as well socio-cultural artefacts resulting from their food production function (Roymans et al., 2009; Kühne, 2013).

The UNESCO defines cultural landscapes as a product of the "combined works of nature and man" that illustrate "the evolution of human society and settlement over time, under the influence of the physical constraints and/or opportunities presented by their natural environment and of successive social, economic and cultural forces, both external and internal" (UNESCO, 2012, p.14). Historical agricultural landscapes represent an important human heritage of inherent value, a "testimony to humanity's long interaction with the land"[1]. Their conservation value is emphasized by the UNESCO and reflected in the World Heritage List, e.g. by the inscription of the famous rice terraces of the Philippine Cordilleras in the year 1995 (Mitchell et al., 2009). This should also underpin that the human relationship to nature is not only of utilitarian value, but as well of intangible value, as it contributes to self-identification (e.g. in the sense of belonging, shared history and culture) and

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[1] http://whc.unesco.org/en/review/69/ (accessed 29 November 2016).

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conveys the sense of home in a landscape (Wöbse, 1996; Backhaus, 2010). The ongoing pressure of increasing and intensifying land use and the related impacts on biodiversity has long been an important subject of science and research (Foley et al., 2005; Steffen et al., 2007).

The Millennium Ecosystem Assessment (MA 2005) was a further effort (after the highly influential contributions of Costanza et al., 1997 and Daily, 1997) to synthesize substantial scientific results regarding the human dependence on functioning ecosystems and the ecosystem services (ES) they deliver. The ES concept has proven to be well suited to analyze the complex interlinkages and feedback processes of human-environment systems (de Groot et al., 2010). However, regarding cultural ecosystem services, it remains a matter of discussion and partly disagreement whether and how cultural values can be integrated as services or benefits in the overall ES concept (Kirchhoff, 2012; Daniel et al., 2012a,b; Satz et al., 2013).

Cultural ecosystem services are often linked with intangible values or non-material functions such as cultural heritage and knowledge systems, which are ambiguous to assess (Kirchhoff, 2012; Hernández-Morcillo et al., 2013). For example, assessment problems include categorical overlaps or results that are difficult to transfer to other spatial scales or local contexts or yet unsolved problems regarding the measurement of benefits of cultural services (Gee and Burkhard, 2010; Kirchhoff, 2012; Hernández-Morcillo et al., 2013).

However, the consideration of intangible services in integrated assessments is crucial for ecosystem management (Chan et al., 2012; Daniel et al., 2012b; Spangenberg et al., 2014a,b). The increasing awareness regarding "nature's intrinsic values" and "nature's benefits to people" as an essential condition for a "good quality of life (human well-being)" is reflected in the Conceptual Framework (CF) of the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES[2]) (Diaz et al., 2015). The IPBES framework includes a transdisciplinary perspective to improve the "*science-policy interface on biodiversity and its social benefits*" and therefore integrates tacit, traditional and local knowledge as essential topics inthe research agenda (Diaz et al., 2015; Sutherland et al., 2013; Folke, 2004). Traditional agricultural landscapes reflect historical cultivation practices, beliefs, habits, and customs of their inhabitants (Wöbse, 1994; Camacho et al., 2012). The preservation of culture and tradition as human heritage has been established as an important argument to protect landscapes and biodiversity from land conversion and land use intensification (Brown et al., 2005). Thus, a cultural understanding is a prerequisite for the development of commonly agreed approaches to sustainably manage and preserve to traditional landscapes (Wöbse, 2002).

This paper presents a study of cultural ecosystem services provided by rice landscapes as perceived by Vietnamese and Philippine small-scale and subsistence farmers under different land use intensities. The study pursues three main objectives: to take an inventory of cultural ecosystem services associated with rice landscapes in South-East Asia, to take a closer look at the potential relationship between land use intensity and the perception of immaterial values of rice landscapes, and to assess the role of culturally embedded and socially shaped preferences for the development or implementation of sustainable land management strategies.

The analysis of socio-ecological feedback processes in this research is framed by an ES approach, that provides a guideline for the scope of the identification and characterization of the ES of seven differently managed rice landscapes in Vietnam and the Philippines (Burkhard et al., 2015). The subjective perspectives of farmers regarding intangible and non-monetary values of their rice landscapes are important to understand socio-cultural factors which determine land use management and hence the state of nature and biodiversity.

This research aims to contribute to the understanding of the cultural services of traditional agricultural landscapes dominated by rice production. The overall objective was the inclusion of a socio-cultural dimension in the development of strategies that support sustainable rice production which is mainly based on biocontrol (rice field food webs), on ecological engineering[3] and on efficient resource management (e.g. soil nutrients)[4]. These strategies aim to mobilize existing, traditional local knowledge and respective management skills influenced by various socio-cultural aspects for a larger-scale application. Further, our approach includes cultural ecosystem services as an essential element of the functional complexity of traditional agricultural landscapes.

A research gap lies in the valuation of cultural services associated with spiritual values, cultural identity, heritage and social cohesion (Chan et al., 2012). Due to the unresolved question concerning the adequate consideration of cultural services, and as their monetary valuation is highly controversial, cultural services they are often included as "implicit components" of decision-making frameworks, in the sense of being "rendered invisible" (Chan et al., 2012).

In this paper we address this research gap through implementing a rigorous evaluation of cultural ecosystem services in the context of smallholder rice production. The study builds on interviews with farmers to explicitly understand their perception of socio-cultural values and benefits attached to rice landscapes. The results can inform the design of ecosystem service assessments in order to better understand agricultural landscape functions and capacities.

2. Study areas –cultural landscapes under investigation

All seven study areas in Vietnam and in the Philippines were strongly shaped by subsistence and smallholder rice production (Box 1). The low-lying study areas of the Red River region in North Vietnam, in the Mekong region in South Vietnam, and in the provinces Laguna and Nueva Ecija, Philippines, were in co-existence with large agricultural production schemes.

Box 1 Definition of smallholders and subsistence farmers (based on Dixon et al., 2007; FaurÉs and Santini, 2008). Smallholder farmers:- Varying farm size between <1 ha and >10 ha, depending on country and agro-ecological zone- Diverse sources of livelihood including significant off-farm income, but still vulnerable to climate and economic shocks- Mixture of cash crop and subsistence farmingSubsistence farmers:- Self-sufficiency farming: almost all agricultural production consumed by farmer's household.

Despite different regional contexts regarding topography, climate, and human lifestyles, all investigated areas were comparable with respect to the dominant land use pattern: rice production that determines landscape sceneries and biodiversity.

For the analysis of landscape-associated cultural ecosystem services three landscape types with different land use intensities were

[2] http://www.ipbes.net/

[3] Mitsch (2012, p.6) defines ecological engineering "as the design of sustainable ecosystems that integrate human society with its natural environment for the benefit of both". As an emerging discipline, ecological engineering aims at developing strategies to strengthen ecosystem services through exploiting natural regulation mechanisms instead of suppressing them (Settele et al., 2013).

[4] This research is part of an international project on sustainable development of rice ecosystems in Southeast Asia, *legato-project.net/(accessed 24 Nov 2016).*